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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/542,209	NAGATA ET AL.
	Examiner	Art Unit	
	MOHAMMAD S. ADHAMI	2471	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 October 2009</u>.

2a)☒ This action is **FINAL**.　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,3-27 and 29-64</u> is/are pending in the application.

　　4a) Of the above claim(s) <u>3-6,8-18,21-27,29-32,34-44,47-64</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,7,19,20,33,45 and 46</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　　1.☐ Certified copies of the priority documents have been received.

　　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

- Applicant's amendment filed 10/21/2009 is acknowledged.

- Claims 1,7,19,20,27,33,45, and 46 have been amended.

- Claims 2 and 28 are cancelled.

- Claims 3-6,8-18,21-26,29-32,34-44, and 47-64 are withdrawn.

- Claims 1,3-27, and 29-64 are pending.

- Applicant's response and amendment with respect to the rejection of claims
  1,2,7,19, and 20 under 35 USC 101 and the rejection of claims
  1,2,7,19,20,27,28,33,45, and 46 under 35 USC 112 2nd paragraph are noted and
  the rejections are withdrawn.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Li (US App. 2002/0163879) in view of Lu (US App. 2003/0185241).

Re claim 1:

        Li discloses *at least one STA* (Para.[0030] each subscriber measures the

SINR of each subcarrier cluster and Para.[0054] Cluster ordering and rate

prediction processing block is coupled to outputs of channel/interference
estimation – where a subscriber is a STA).

Li further discloses *assessing the respective transmission rates of the
plurality of data transmission paths to define a size ratio corresponding to the
transmission rates* (Para.[0083] Because each subscriber's transmission rate for
a particular cluster may differ, the amount of data that may be "loaded" into a
single data segment will differ for each subscriber per each cluster. This amount
of data that may be "loaded", or, in other words, that can "fit", into a cluster may
be referred to as that cluster's size – where the variation of size based on the
rate is a ratio and Para.[0005] In a multi-carrier communication system, each
subscriber may be allocated multiple carriers and can use the multiple carriers
simultaneously).

Li further discloses *obtaining from a transmission buffer associated with
one of the STA's at least one data frame to be transmitted* (Para.[0083] Each one
of cluster data queues stores data segments that are to be transmitted through a
cluster associated with that cluster data queue).

Li further discloses *fragmenting a data part extracted from a data field of
the one data frame to be transmitted by applying the size ratio* (Para.[0083]
Each cluster may be divided into data segments and Para.[0084] Media access
controller segments the user data packets from user data queues into data
segments, each data segment having the correct size based on that cluster's
transmission rate).

Li further discloses *generating X data blocks that have data fields equal to or smaller than Dmax and that have a same packet time length* (Para.[0083] This amount of data that may be "loaded", or, in other words, that can "fit", into a cluster may be referred to as that cluster's size. Each data segment fits into one cluster over one-frame duration (e.g.10ms). The data segments are time-aligned – where the cluster size is Dmax).

Li further discloses *generating X data packets by adding to each data block, a header field containing control information* (Para.[0124] different packet header patterns are used to distinguish the data packets).

Li further discloses *transmitting the X data packets simultaneously over the plural data transmission paths* (Para.[0005] In a multi-carrier communication system, each subscriber may be allocated multiple carriers and can use the multiple carriers simultaneously and Para.[0019] The methods directly apply to much more generic multi-carrier system, a multi-input multi-output (MIMO) - where in MIMO packets are transmitted simultaneously over plural data transmission paths).

Li does not explicitly disclose *control information that includes destination information and an FCS field containing an error checking code.*

Lu discloses *control information that includes destination information and an FCS field containing an error checking code* (Fig.8 ref.156 has destination information and ref.170 is a FCS field containing error checking code and Para.[0038] The four address fields are generally used to indicate the

destination address and Para.[0037] the FCS enables error detection and

Para.[0010] With MIMO, the bit stream can be broken into two parts and the

parts can then be transmitted simultaneously via the four communication links).

Li and Lu are analogous because they both pertain to data

communications.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include control information including destination

information and an FCS field as taught by Lu in order to properly route data and

to check the data for errors.

Re claim 27:

Li discloses *at least one STA* (Para.[0030] each subscriber measures the

SINR of each subcarrier cluster and Para.[0054] Cluster ordering and rate

prediction processing block is coupled to outputs of channel/interference

estimation – where a subscriber is a STA).

Li further discloses *a first unit to assess the respective transmission rates*

of the plurality of data transmission paths to define a size ratio corresponding to

the transmission rates (Para.[0083] Because each subscriber's transmission rate

for a particular cluster may differ, the amount of data that may be "loaded" into a

single data segment will differ for each subscriber per each cluster. This amount

of data that may be "loaded", or, in other words, that can "fit", into a cluster may

be referred to as that cluster's size – where the variation of size based on the

rate is a ratio and Para.[0005] In a multi-carrier communication system, each

subscriber may be allocated multiple carriers and can use the multiple carriers simultaneously).

Li further discloses *a transmission buffer associated a STA configured to store at least one data frame to be transmitted* (Para.[0083] Each one of cluster data queues stores data segments that are to be transmitted through a cluster associated with that cluster data queue).

Li further discloses *a second unit generating X data blocks that have data fields equal to or smaller than Dmax and that have a same packet time length by fragmenting a data part extracted from a data field of the data frame to be transmitted by applying the size ratio* (Para.[0083] Each cluster may be divided into data segments. This amount of data that may be "loaded", or, in other words, that can "fit", into a cluster may be referred to as that cluster's size. Each data segment fits into one cluster over one-frame duration (e.g.10ms). The data segments are time-aligned and Para.[0084] Media access controller segments the user data packets from user data queues into data segments, each data segment having the correct size based on that cluster's transmission rate – where the cluster size is Dmax).

Li further discloses *a third unit generating X data packets by adding to each data block, a header field containing control information* (Para.[0124] different packet header patterns are used to distinguish the data packets).

Li further discloses *a fourth unit that transmits the X data packets simultaneously over the plural data transmission paths* (Para.[0005] In a multi-

carrier communication system, each subscriber may be allocated multiple

carriers and can use the multiple carriers simultaneously. And Para.[0019] The

methods directly apply to much more generic multi-carrier system, a multi-input

multi-output (MIMO) - where in MIMO packets are transmitted simultaneously

over plural data transmission paths).

Li does not explicitly disclose *control information that includes destination*

information and an FCS field containing an error checking code.

Lu discloses *control information that includes destination information and*

an FCS field containing an error checking code (Fig.8 ref.156 has destination

information and ref.170 is a FCS field containing error checking code and

Para.[0038] The four address fields are generally used to indicate the

destination address and Para.[0037] the FCS enables error detection and

Para.[0010] With MIMO, the bit stream can be broken into two parts and the

parts can then be transmitted simultaneously via the four communication links).

Li and Lu are analogous because they both pertain to data

communications.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include control information including destination

information and an FCS field as taught by Lu in order to properly route data and

to check the data for errors.

3.   Claims 7 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Li in view of Lu as applied to claims 1 and 21 above, and further in view of Kadous (US

App.2005/0008092).

Re claim 7:

As discussed above, Li meets all the limitations of the parent claim.

Li does not explicitly disclose *setting the transmission rates of the*

respective transmission media to a same rate as a smallest rate of the

transmission rates when independently setting the transmission rates of the

respective transmission media for transmitting the X data packets simultaneously

is possible.

Kadous discloses *setting the transmission rates of the respective*

transmission media to a same rate as a smallest rate of the transmission rates

when independently setting the transmission rates of the respective transmission

media for transmitting the X data packets simultaneously is possible (Para.[0029]

The data rate, coding, and modulation for each data stream may be determined

by controls provided by a controller and Para.[0123] the same data rate is used

for all data streams

Li and Kadous are analogous because they both pertain to data

communications.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include independently setting the transmission rate

and setting the rate to be the same as taught by Kadous in order to optimize the

data rate based on channel conditions.

Re claim 33:

As discussed above, Li meets all the limitations of the parent claim.

Li does not explicitly disclose *a fifth unit that sets the transmission rates of*

the transmission media to a smallest rate of the transmission rates when

independent setting of the transmission rates of the transmission media for

transmitting the X data packets simultaneously is possible.

Kadous discloses *a fifth unit that sets the transmission rates of the*

transmission media to a smallest rate of the transmission rates when

independent setting of the transmission rates of the transmission media for

transmitting the X data packets simultaneously is possible (Para.[0029] The data

rate, coding, and modulation for each data stream may be determined by

controls provided by a controller and Para.[0123] the same data rate is used for

all data streams

Li and Kadous are analogous because they both pertain to data

communications.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include independently setting the transmission rate

and setting the rate to be the same as taught by Kadous in order to optimize the

data rate based on channel conditions.

4.　　　　Claims 19,20,45, and 46 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Li in view of Lu as applied to claims 1 and 27 above, and further in

view of Terry (US 7,046,651).

Re claims 19 and 45:

As discussed above, Li meets all the limitations of the parent claim.

Li does not explicitly disclose *X data packets generated after the*

simultaneous transmission of the X data packets are transmitted continuously

without performing carrier sense, until a time corresponding to a transmission

time of data packets generated from the one data frame before fragmentation

passes.

Terry further discloses *X data packets generated after the simultaneous*

transmission of the X data packets are transmitted continuously without

performing carrier sense, until a time corresponding to a transmission time of

data packets generated from the one data frame before fragmentation passes

(Col.11 lines 13-14 Carrier Sense Multiple Access with Collision Avoidance

(CSMA/CA)).

Li and Terry are analogous because they both pertain to data

communication.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include transmitting continuously without performing

carrier sense, until a time corresponding to a transmission time of data packets

generated from the one data frame before fragmentation passes as taught by

Terry in order to avoid collisions during data transmission.

Re claims 20 and 46:

Li does not explicitly disclose *X data packets generated after the*

simultaneous transmission of the X data packets are transmitted consecutively X

times without performing carrier sense.

Terry further discloses *X data packets generated after the simultaneous*

transmission of the X data packets are transmitted consecutively X times without

performing carrier sense (Col.11 lines 13-14 Carrier Sense Multiple Access with

Collision Avoidance (CSMA/CA)**)**.

Li and Terry are analogous because they both pertain to data

communication.

It would have been obvious to one of ordinary skill in the art at the time of

the invention to modify Li to include transmitting packets continuously without

performing carrier sense as taught by Terry in order to avoid collisions during

data transmission.

Response to Arguments

5.   Applicant's arguments with respect to claims 1 and 27 have been considered but

are moot in view of the new ground(s) of rejection.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. Foschini (US App. 2002/0142723) shows transmitting with MIMO

using the same rate and variable rate. Affes (US App. 2002/0051433) shows the

number of segments being determined by data rate.

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

        A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

        Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MOHAMMAD S. ADHAMI whose telephone number is

(571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad S Adhami/   /Chi H Pham/
Examiner, Art Unit 2471   Supervisory Patent Examiner, Art
                                                       Unit 2471